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Headquarters
Washington DC 20546-0001



AUG 16 1994

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Professor Liu Anguo
Director General
Bureau for Coordination Development
of Nature and Society
Chinese Academy of Sciences
Beijing 100864
CHINA

Dear Professor Liu:

In June of 1987, NASA issued a "NASA Research Announcement" (NRA-87-OSSA-5) soliciting research proposals to conduct scientific investigations in the use of radar remote sensing studies of the Earth employing the Shuttle Imaging Radar-C (SIR-C). The Team Leader for the SIR-C Experiment is Dr. Charles Elachi of the Jet Propulsion Laboratory (JPL); the Program Scientist is Dr. Miriam Baltuck; and the Project Scientist is Dr. Diane Evans. The Project Scientist will be responsible for the management and coordination of the SIR-C Science Team and will be the key point of contact for SIR-C Science Team Members. In the event of a proposed substitution of a Chinese Academy of Science-sponsored participant on the team, the Chinese Academy of Sciences will request approval of the replacement through the Program Scientist.

Originally, a proposal submitted by Dr. Yang Shiren, of the National Remote Sensing Center, entitled "Radar Penetration Studies and Quantitative Analysis of SIR-C and X-SAR Imagery in Test Areas of China", was selected as a part of the SIR-C Experiment, and Yang Shiren was named a Team Associate. The Chinese Academy of Sciences later named a new Principal Investigator, Dr. Guo Huadong to the investigation. Dr. Guo made a proposal to NASA, which NASA accepted, to modify the original proposal to "Evaluation of SIR-C/X-SAR Data for Geologic Studies in China." Dr. Guo's investigation includes several Chinese Co-Investigators.

It is expected that the SIR-C mission will yield new and advanced scientific studies of the Earth. SIR-C will be the first instrument to acquire simultaneously images at L-band and C-band with HH, VV, or VH polarizations, as well as images of the phase difference between HH and VV polarizations. This data will be digitally encoded and recorded using onboard high-density digital tape recorders and will later be digitally processed into images

using the JPL SAR Processor. As currently planned, the SIR-C experiment will fly on two NASA missions, Space Radar Laboratory (SRL-1 and SRL-2), scheduled for launch on the Space Shuttle in April 1994 and August 1994.

It should be understood that as a condition of selection as a Team Associate, NASA will use its best efforts to collect data for the Team Associate and will encourage the Team Associate to collaborate with the Team Members; however, the Team Associate's data requests will have a lower priority than those of the Team Members.

In order to carry out this cooperative activity, I would like to propose the following arrangements.

NASA will fulfill the following responsibilities:

1. Provide digitally correlated SIR-C data to all selected Team Members and Associates in accordance with requirements given in his/her statement of work;
2. Determine priorities for SIR-C sensor operations, ground-based data processing, and data dissemination, and inform the Team Associate if these determinations have a substantial impact upon the investigation; and
3. Review each investigation to determine the feasibility of proceeding with the prospective effort in the event of abnormal performance of the SIR-C sensor system and associated data equipment. If NASA determines that it is no longer feasible to continue the investigation as planned, NASA will notify the Team Associate of NASA's intent to modify or terminate the investigation.

The Chinese Academy of Sciences will ensure fulfillment of the following responsibilities by Dr. Guo and the other Chinese Co-Investigators and ensure that all their activities are carried out in accordance with the terms and conditions set forth herein:

1. Support Dr. Guo's participation in the operations activities as required by the SIR-C Investigator Team Members;
2. Obtain any additional data or technical information required for the successful completion of the investigation;
3. Conduct scientific analyses and interpretation of the data;
4. Provide a final report to NASA describing the results of data analysis activities; and
5. Return to NASA data provided to the Team Associate if the agreement is terminated prematurely.

The NASA Points of Contact for the SIR-C experiment are:

Mr. Richard Monson, Program Manager
Code YFE, NASA Headquarters
Tel: (202) 358-0270

Dr. Miriam Baltuck, Program Scientist
Code YSG, NASA Headquarters
Tel: (202) 358-0273

Mr. Mike Sander, Project Manager
The Jet Propulsion Laboratory
Tel: (818) 354-7810

Dr. Diane Evans, Project Scientist
The Jet Propulsion Laboratory
Tel: (818) 354-2418

NASA and the Chinese Academy of Sciences will each bear the cost of discharging its respective responsibilities, including travel and subsistence of its own personnel and transportation of all equipment for which it is responsible. Further, it is understood that the ability of NASA and the Chinese Academy of Sciences to carry out their financial obligations is subject to the availability of appropriated funds.

Designated Team Members, Team Associates, and investigators will have a period of three months of exclusive data use beginning with the receipt of data in a form suitable for analysis, to perform verification and calibration and to engage in science activities coordinated between NASA and the Chinese Academy of Sciences. General release of suitable SIR-C data sets is planned through NASA. With regard to general distribution of SIR-C data, following the period of investigator exclusivity, data sets will be placed in an appropriate archive and made available to users at no more than the marginal cost of filling the specific user request. During the period of investigator activity, designated investigators will be given priority treatment over other users in receiving data products needed to conduct their investigations.

It should be noted that, as is provided in the Memorandum of Understanding between NASA and the Federal Minister for Research and Technology of the Federal Republic of Germany, signed October 6, 1987, for flight of the X-Band Synthetic Aperture Radar (X-SAR) jointly developed by Germany and Italy, general release of suitable X-SAR data sets will be done through the German Space Agency and the German Aerospace Research Establishment (DARA/DLR) and the Italian Space Agency (ASI).

The results of the investigations have to be published by the designated investigators. External requests for SIR-C data should be referred to the selected archive site. In the event any reports or publications are copyrighted, NASA and the Chinese Academy of Sciences shall have a royalty-free right under the copyright to reproduce, distribute and use such copyrighted work for their own purposes.

Release of public information regarding this project may be made by the appropriate agency for its own portion of the program as desired and, insofar as participation of the other is involved, after suitable consultation.

Each Party is obligated to transfer to the other Party only those technical data and goods necessary to fulfill its responsibilities under this agreement, subject to the following:

1. Interface, integration, and safety data (excluding detailed design, manufacturing, and processing data, and associated software) will be exchanged by the Parties without restriction as to use or disclosure.

2. In the event a Party finds it necessary to transfer technical data other than that specified in paragraph 1 above, in carrying out its responsibilities under the agreement that are proprietary, and for which protection is to be maintained, such technical data will be marked with a notice indicating that it shall be used and disclosed by the receiving Party and its contractors and subcontractors only for the purposes of fulfilling the receiving Party's responsibilities under this agreement, and that the technical data shall not be disclosed or

retransferred to any other entity without prior written permission of the furnishing Party. The receiving Party agrees to abide by the terms of the notice, and to protect any such marked technical data from unauthorized use and disclosure.

3. In the event a Party finds it necessary to transfer technical data and goods in carrying out its responsibilities under this agreement that are export-controlled, the furnishing Party shall mark such technical data with a notice and identify such goods. The notice or identification shall indicate that such technical data and goods shall be used, and such technical data shall be disclosed, by the receiving Party and its contractors and subcontractors only for the purposes of fulfilling the receiving Party's responsibilities under this agreement. The notice or identification shall also provide that such data and goods shall not be retransferred, to any other entity without prior written permission of the furnishing Party. The Parties agree to abide by the terms of the notice or identification and to protect any such marked technical data and identified goods.

4. The Parties are under no obligation to protect any unmarked technical data or unidentified goods.

Nothing in this agreement shall be construed as granting or implying any rights to, or interest in, patents or inventions of the Parties or their contractors or subcontractors.

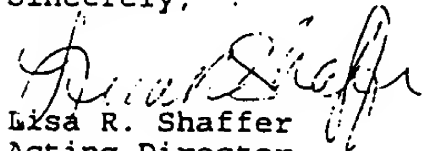
With respect to activities undertaken pursuant to this agreement, neither NASA nor the Chinese Academy of Sciences shall make any claims against the other, the other's related entities (e.g. contractors and subcontractors) or employees of the other or the other's related entities for any injury to, or death of, its own employees or employees of its related entities, or for damage of any kind to, or loss of, its property or the property of its related entities, arising from the activities outlined herein, whether such injury, death, damage or loss arises through negligence or otherwise, except in the case of willful misconduct.

NASA and the Chinese Academy of Sciences will attempt to facilitate free customs clearance of supplies, equipment, and materials necessary to carry out this project.

This agreement will go into effect upon the date of the Chinese Academy of Science's affirmative reply. It will remain in force for four years after the second launch of SIR-C unless terminated by either of the Parties upon six months' written notice of its intention to terminate the agreement. It may be extended or amended by mutual written consent of the Parties.

If the above terms and conditions are acceptable to the Chinese Academy of Sciences, we propose that this letter, together with your affirmative reply, document our joint understanding as to the implementation of this cooperative effort.

Sincerely,



Lisa R. Shaffer
Acting Director
Mission to Planet Earth Division
Office of Policy Coordination and
International Relations